ABSTRACT OF THE DISCLOSURE

An arc tube, which is capable of prolonging the life thereof by preventing occurrence of a leak caused from a crack of an arc-tube body, has the average surface roughness of each of outer surfaces 26Aa and 26Ba of tungsten electrodes 26A and 26B pinch-sealed to pinch seal portions 20b1 and 20b2 on the two sides of a light-emission tube 20a of an arc-tube body 20 is set to be 3 μm or smaller. Thus, the state of pinch-sealing of the tungsten electrodes 26A and 26B to the pinch seal portions 20b1 and 20b2 is brought to a state in which the two elements are engaged with small pits and projections. Therefore, great compressive stress is not left in the region adjacent to the joint surface between the pinch seal portions 20b1 and 20b2 and the tungsten electrodes 26A and 26B as distinct from the conventional structure. In a case where a crack of the arc-tube body 20 is formed owing to the residual compressive stress, the crack is limited to a local portion which is the region adjacent to the joint surface. As a result, the crack is not enlarged to reach the surface of the arc-tube body 20.